EFFECTS OF AN ONLINE PEDIATRIC MENTAL HEALTH TRAINING INTERVENTION FOR NURSE PRACTITIONERS

A DOCTOR OF NURSING PRACTICE PROJECT SUBMITTED TO THE OFFICE OF GRADUATE EDUCATION OF THE UNIVERSITY OF HAWAIʻI AT MĀNOA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF NURSNG PRACTICE

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Dedication

In loving memory of my father, I hope I've made you proud. Thank you to my family for always supporting me.

Abstract

In the United States one in every five youths aged 13-18 meet criteria for a lifetime mental disorder, yet fewer than half of these children receive mental health services. Primary care providers are relied upon as the first line of detection and management of mental health issues, but a lack of knowledge and low confidence in this area are significant barriers that affect delivery of care. In collaboration with the Hawaii Keiki program, this evidence-based practice project utilized an online training intervention to improve nurse practitioners' ability to effectively identify, address, and refer MH issues in school health clinics. A pretest/posttest evaluation was performed to analyze providers' knowledge, confidence, and preparedness over three months. Results demonstrated an overall increase in scores over time compared to baseline data. Provider trends in knowledge and self-efficacy were analyzed, and individual t-tests were used to determine statistical significance. Results will aid the organization in refining protocols for mental health training of school-based providers.

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Introduction

A mental health (MH) disorder is defined as a change in thinking, emotion, and/or behavior that is associated with distress or problems functioning in social, work, or family activities (American Psychiatric Association [APA], 2015). In the United States, mental illnesses account for 25% of all years of life lost due to disability and premature mortality (Hawaii Health Data Warehouse, 2014). Individuals living with serious mental illness face an increased risk of having associated chronic conditions and hospitalizations that cost the United States approximately $193.2 billion in lost earnings each year (National Alliance on Mental Illness [NAMI], 2016). Most concerning, one in every five youths aged 13-18 in the general population, meet criteria for a lifetime mental disorder, yet fewer than half of these children receive treatment resulting in lost educational opportunities, incarceration, and youth suicide (Bohnenkamp & Stephan, 2015).

Description of Problem

This national mental health problem is also reflected in the youth of Hawaii as 29.0% of high school students reported having depression in 2015. Moreover, depression rates have been steadily rising for Hawaii middle school students, increasing from 22.3% in 2003 to 28.3% in 2009 (Hawaii Health Data Warehouse, 2015). Treatment rates are generally poor as only 30.1% of adolescents who reported having a major depressive episode between 2007-2014 received MH treatment the year prior to being surveyed (Substance Abuse and Mental Health Services Administration [SAMHSA], 2015). This data clearly demonstrates a need for quality improvement initiatives that address issues related to efficiency, access, and cost of mental health care for Hawaii youth.

The site for this evidence-based project was Hawaii Keiki, a program created by the

Hawaii Department of Education (DOE) and the University of Hawaii School of Nursing and Dental Hygiene (SONDH) to build and enhance school-based health services for youth. Hawaii Keiki places a Nurse Practitioner (NP) in designated areas throughout the state to provide comprehensive health services to public school students of all ages. Hawaii Keiki NPs assess and manage a whole spectrum of acute and chronic pediatric conditions, as well as work in collaboration with community resources for referrals and outreach (Hawaii Keiki, 2017). However, when it comes to the specific needs of patients with MH issues, Hawaii Keiki currently has no formal protocols for MH training of their providers. Their standard MH screenings consist of the very broad Patient Health Questionaire-2 (PHQ-2) and the expanded-version (PHQ-9) to detect depression, as well as the Generalized Anxiety Disorder scale (GAD-2) to detect anxiety disorders. These screening tools come built into the EPIC charting system used at Hawaii Keiki, but they are not designed exclusively for pediatric patients.

According to the literature, many models of mental health care delivery rely on the primary care provider (PCP) as the first line of detection and management of MH issues, yet data shows that PCPs have identified a general lack of MH knowledge and low confidence as the primary barriers to effective delivery of care (McCue Horwitz et al., 2015). This DNP project focused on 10 Hawaii Keiki NPs in school health clinics across the state. These NPs participated in an online, evidence-based MH training designed to increase provider knowledge and self-efficacy with the overall goal to improve identification, assessment, and referral of pediatric MH disorders.

Review of the Literature

A literature search was conducted to gather and critique the data related to the topic of improving MH competence and/or self-efficacy by utilizing training interventions for PCPs in

pediatric and school-based settings.

The literature search was conducted utilizing the databases PubMed Medline, CINAHL, PsycINFO, and ScienceDirect. The key terms used in the searches included combinations of: "clinical competence or self-efficacy," "training or education," "mental disorders," "school-based mental health or pediatric primary care," and "nurse practitioners or physicians." Searches included all available studies published between 1980-2018 with the filters of English language and ages birth to 18 years old. Searches in CINAHL included additional filters of "major topic-mental disorders," and searches in ScienceDirect included additional topic filters of "mental health," and "child," and "student." Results were as follows: PubMed 43 studies, CINAHL 32 studies, PsychINFO 26 studies, and ScienceDirect 29 studies. Inclusion criteria consisted of studies in English; pediatric patients in primary care or school health clinics; provider training on screening, assessment, management, and/or treatment of MH issues; and studies that sought to increase MH knowledge or self-efficacy. If a study did not meet these criteria it was excluded from the review. Of the 130 studies found, 24 studies met the inclusion criteria and were critiqued, and eight studies were deemed significant to the project and were included in the final literature synthesis as detailed in Table 1. Overall, the eight studies had a moderate quality of evidence with the majority of studies being quasi-experimental pretest/posttest designs. The studies were evaluated and placed into a literature matrix according to sub-concepts of provider training and self-efficacy.

Table 1

Literature Review Articles-Arranged by Levels of Evidence

MOSBY'S LOE	**STUDIES (n=8)**
Level I **Meta-analysis**	None

Level II Randomized controlled trial	Ambresin et al., 2017					
Level III Quasi-experimental	Buckelew, Adams, Irwin, Gee, and Ozer, 2008	Burka, Van, Cleve, Shafner, and Barkin, 2014	Fallucco, Seago, Cuffe, Kreamer, and Wysocki, 2014	Gledhill, Kramer, Iliffe, and Garralda, 2002	Kerker et al., 2014	Stephan, Connors, Arora, and Brey, 2013
Level IV Longitudinal	None					
Level V Correlation	None					
Level VI Interview	Gadomski et al., 2014					
Level VII Expert opinion or committee report	None					

Provider Training

Six studies, including one randomized controlled trial (RCT) and five quasi-experimental pretest/posttest designs, utilized educational programs that were face-to-face, interactive, and multifaceted which had been shown to be more effective than singular approaches in changing clinician practice. The six interventions included in-person trainings, group sessions, workshops, interdisciplinary learning collaboratives, case-based seminars, and distance learning. These modalities fostered reciprocal interactions between the facilitator and participants to engage the material. Four programs utilized additional interactive components which proved successful including role play, case studies, and consultation phone calls. The results of these interventions were promising as all six studies showed a significant improvement in provider knowledge and confidence regarding identification and management of pediatric MH disorders. In particular, there was improvement in the frequency and quality of MH screenings (Ambresin et al., 2017; Stephan et al., 2013; Fallucco et al., 2014); an increase in the sensitivity and predictive validity of general practitioner diagnosis (Gledhill et al., 2002); increased comfort in utilizing non-

pharmacological interventions (Burka et al., 2014; Fallucco et al., 2014; Gledhill et al., 2002); an increase in psychotropic medication use among trained providers (Kerker et al., 2014); and improvements in follow-up processes over time (Stephan et al., 2013). Furthermore, two studies demonstrated that the positive changes remained consistent over time at 16 months and 24 months post-intervention which indicated long-term changes in provider behavior and practice (Stephan et al., 2013; Falluco et al., 2014).

Self-Efficacy

Two studies investigated the effect of training programs on self-efficacy for pediatric and school-based PCPs. The studies consisted of one quasi-experimental pretest/posttest that evaluated a training designed to increase provider self-efficacy in screening and counseling for risky behaviors. The other study was a non-experimental interview that evaluated different program components that lead to changes in provider practice, as well as investigated contextual factors that influenced sustainability (Buckelew, Adams, Irwin, Gee, & Ozer, 2008, Level III; Gadomski et al., 2014, Level VI). Both studies demonstrated increased self-efficacy as a result of the training interventions. The pretest/posttest study found that self-efficacy increased for screening and counseling in all six target areas (tobacco, alcohol, drugs, sexual behavior, seatbelt, and helmet) even 10 months after completing the training (Buckelew et al., 2008). The interview study was based on qualitative data obtained from pediatric and school-based PCPs who had attended a multifaceted training intervention. Trained PCPs reported more confidence in assessing MH severity, prescribing medication, developing treatment plans, and interacting with MH specialists. The primary weakness was identified as a lack of alternative options to accommodate providers' busy schedules, but web-based trainings or webinars were offered as a potential solution (Gadomski et al., 2014). In both of these studies, the sum of the program's

components appeared to work synergistically in changing providers' attitudes and practice habits over time.

Application to DNP Project

Based on the literature review, the best training intervention was an in-person, interactive, and multifaceted program that taught important core skills that could be applied to a broad range of MH issues. First, the training should be comprehensive and include education on tools for assessment and diagnosis, pharmacological management, therapeutic interventions, and referral/follow-up (Burka et al., 2014; Fallucco et al., 2014; Gledhill et al., 2002; Kerker et al., 2014). Second, the training should include an interactive component to help the providers engage the content in order to produce sustainable changes in knowledge, attitude, and practice habits (Fallucco et al., 2014; Stephan et al., 2013). Lastly, the training intervention should be supplemented with some form of implementation support to drive improvements, provide feedback, and promote sustainability (Ambresin et al., 2017; Stephan et al., 2013).

Intervention

Mental Health Training Intervention for Providers in Schools (MH-TIPS)

The training intervention selected for this project was the online version of the Mental Health Training Intervention for Providers in Schools (MH-TIPS). This online training program was designed to increase provider knowledge and confidence in five key areas that are applicable to a broad range of MH issues with content based on the latest available evidence from the University of Maryland School of Medicine and leading experts in the fields of mental health, pediatrics, and public health. The program includes education on common MH factors, identification & assessment, crisis response & safety, psychotropic medications, and referral/resource mapping. This particular program was most beneficial for Hawaii Keiki because

the course was free of charge, it could be done at the providers own pace and required only 12 hours to complete, and participants received continuing education credits applicable towards NP license renewal.

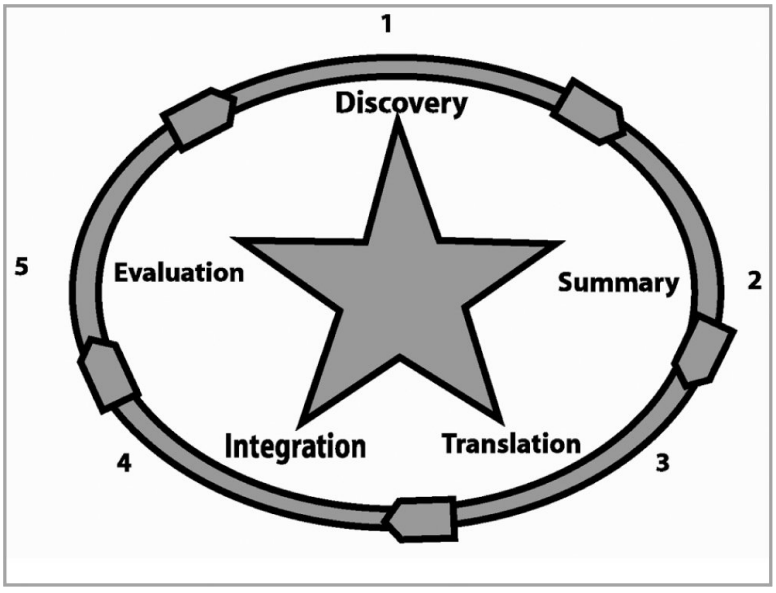
Theoretical/Conceptual Framework

Star Model of Knowledge Transformation

An evidence-based practice (EBP) framework known as *The Star Model of Knowledge Transformation* was utilized to guide the major components of this project. This model was useful for understanding the nature and characteristics of different forms of knowledge that were utilized in EBP and how to systematically integrate that knowledge into clinical practice. The model, shown in Figure 1, is configured as a 5-point star that represents the five major stages of knowledge transformation: 1) discovery, 2) summary, 3) translation, 4) integration, and 5) evaluation.

Figure 1

Star Model of Knowledge Transformation



The first step in the process of knowledge transformation was discovery which entailed

building the collection of literature on MH interventions for pediatric and school-based PCPs. The second step was summary of the evidence in which the literature was synthesized, compiled with other sources of knowledge, and meaningfully arranged. The third step was translation to clinical guidelines where the evidence was interpreted and then applied to the specific context of Hawaii Keiki NPs in school health clinics. The fourth step was integration into practice which included the implementation of a sustainable MH training program. The final step was evaluation of the outcomes in which the impact of the MH training intervention was evaluated based on the measures of provider knowledge and self-efficacy.

PICO Question

The PICO question that guided the project was: For Hawaii Keiki Nurse Practitioners (P), was an online mental health training program (I) in comparison to current practice (C), effective to improve provider knowledge & self-efficacy in order to better identify, address, and refer pediatric MH issues in the school-based health setting (O)?

Purpose & Goals

The purpose of this Doctor of Nursing Practice (DNP) project was to increase provider knowledge, confidence, and preparedness of MH issues through utilization of the online MH-TIPS program. The outcome objective of this project was to improve the providers' ability to identify, address, and refer pediatric MH concerns in the school-based health setting. In order to achieve this goal, short-term and long-term changes in provider knowledge, attitudes, and behavior were assessed. The evaluation objective for this project was that at least 60% of participating Hawaii Keiki NPs would demonstrate an increase in MH knowledge scores, confidence ratings, and preparedness ratings at one-week post- and 3-months post-intervention compared to pre-intervention data.

Methods/ Procedures

Project Design

First, this project was classified as an evidence-based practice project which is a systematic process that implements and evaluates an intervention based on new knowledge generated by research (Crawford, 2015). EBP integrates the best available clinical evidence, judgement, and patient preferences in making practice and policy decisions with a methodology focused on measuring knowledge, attitudes, behaviors, and outcomes (Harris Health Systems, 2014).

Next, this project utilized a quasi-experimental pretest/posttest design which intentionally lacked randomization or a control group. As the purpose of this intervention was to help improve clinical practice for Hawaii Keiki NPs, it would have been unethical and unsafe to withhold training from several NPs for a control or comparison group. Moreover, this project did not involve vulnerable populations or collection of sensitive information so approval by the Institutional Review Board (IRB) was not required.

An electronic notice of informed consent was provided to the NPs before participation in the assessment surveys and privacy was strictly maintained as data was collected anonymously. The Executive Director of Hawaii Keiki assigned each NP a random number to be used during the assessments and the DNP student was unaware of which number corresponded with each NP. Lastly, participation numbers were never linked to the results whenever data was shared in order to protect the identity of the NPs.

Sampling Plan

The scope of this project was limited to a total of 10 Hawaii Keiki NPs across the state who were working at one of the designated school health clinics during the time of the project.

Participation in the online MH-TIPS training was mandatory for all Hawaii Keiki NPs, but participation in the assessment surveys was voluntary.

Data Collection

The data collection tool for this project consisted of an online pre-& post-training survey comprised of three key sections based the assessment survey used in the MH-TIPS California (CA) pilot study, and has been reproduced for this project with permission from the researchers (see Appendix A, B, & C; Center for School Mental Health, 2018). The sections included a 29-question MH quiz based on content from the MH-TIPS training, a four-point Likert scale with seven questions to assess provider confidence, and a five-point Likert scale with five questions to assess provider preparedness. Google Forms was used to input these three sections into an online assessment survey that was used for data collection. All questions and point values in the project's online survey were identical to the original pilot assessments. Data was collected anonymously utilizing participation numbers in lieu of names and the settings in Google Forms were set to private so that only the DNP student had access to the results and feedback.

Data collection occurred at three specific time points throughout the project. A unique link would be sent to participants by the Hawaii Keiki Director and the NPs had seven days to complete the assessment. The pre-training assessment (baseline) was open to participants between August 1-8, 2018. Next, the NPs had two weeks to complete the online MH-TIPS course and submit a certification of completion to the Hawaii Keiki Director by August 31, 2018. The one-week post-training assessment (post #1) was open between August 31- September 7, 2018. Lastly, the 3-month post-training assessment (post #2) occurred three months later between December 3-10, 2018. Analysis of the data and evaluation of the outcomes took place the

following semester from January-February 2019 and the results were disseminated in early April 2019 via a formal presentation at the University of Hawaii at Manoa.

Results

Objectives

This DNP project aimed to improve the Hawaii Keiki NPs' ability to effectively identify, address, and refer pediatric MH concerns in a school-based health setting. Provider changes in knowledge, confidence, and preparedness were measured using an online pretest/posttest survey prior to training and at two different times post-training. The evaluation objective for this project was that at least 60% of participants would demonstrate an increase in MH knowledge scores and self-efficacy ratings at both post-intervention assessments compared to baseline data.

Description of Sample

All 10 NPs employed by Hawaii Keiki on Oahu, Maui, and Hawaii Island received the online MH-TIPS training and participated in the online surveys. Since participation in the surveys were voluntary, the number of participants varied for each assessment. The baseline assessment included 10 NPs, post #1 included eight NPs, and post #2 included eight NPs. In total, six NPs participated in all three assessments and four NPs participated in two out of three assessments.

Trend Analysis for Process & Outcome Variables

In this quality-improvement project, changes in NPs' knowledge, confidence, and preparedness were assessed over time using a training-specific MH quiz worth a total of 29 points, a four-point Likert scale to assess confidence, and a five-point Likert scale to assess preparedness. The overall results were reported in Charts 1, 2, & 3 as a mean score (M) and

standard deviation (SD) for each of the three categories. All descriptive statistics and data analysis were calculated using Excel 2016.

Chart 1

Pre/Post Test Knowledge Mean Scores

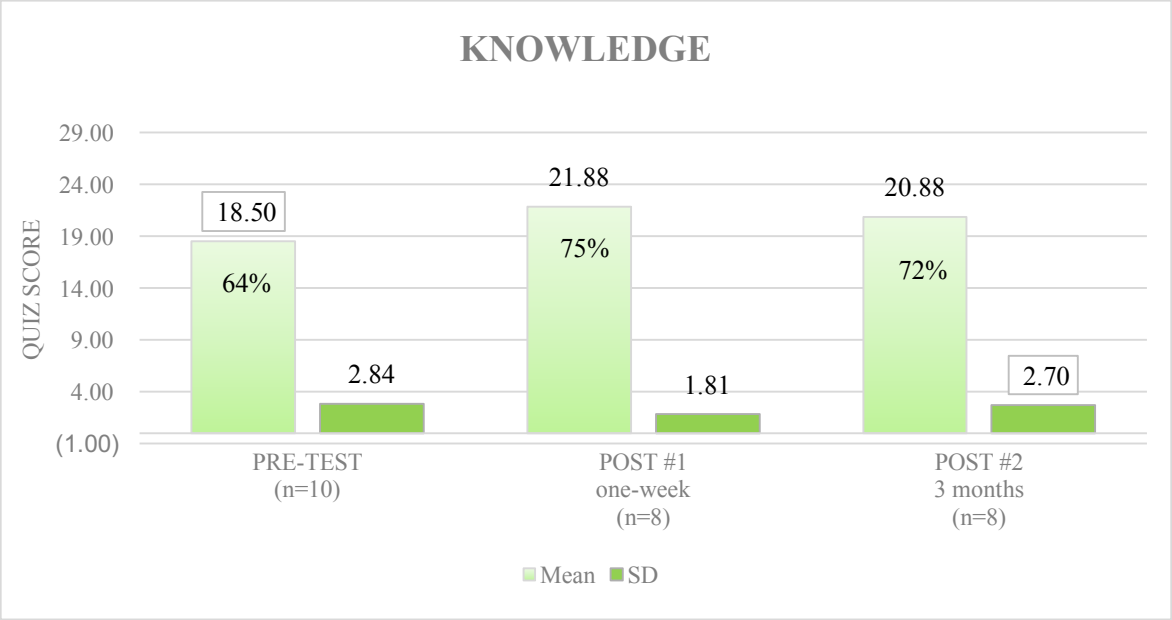


Chart 2

Pre/Post Test Confidence Mean Scores

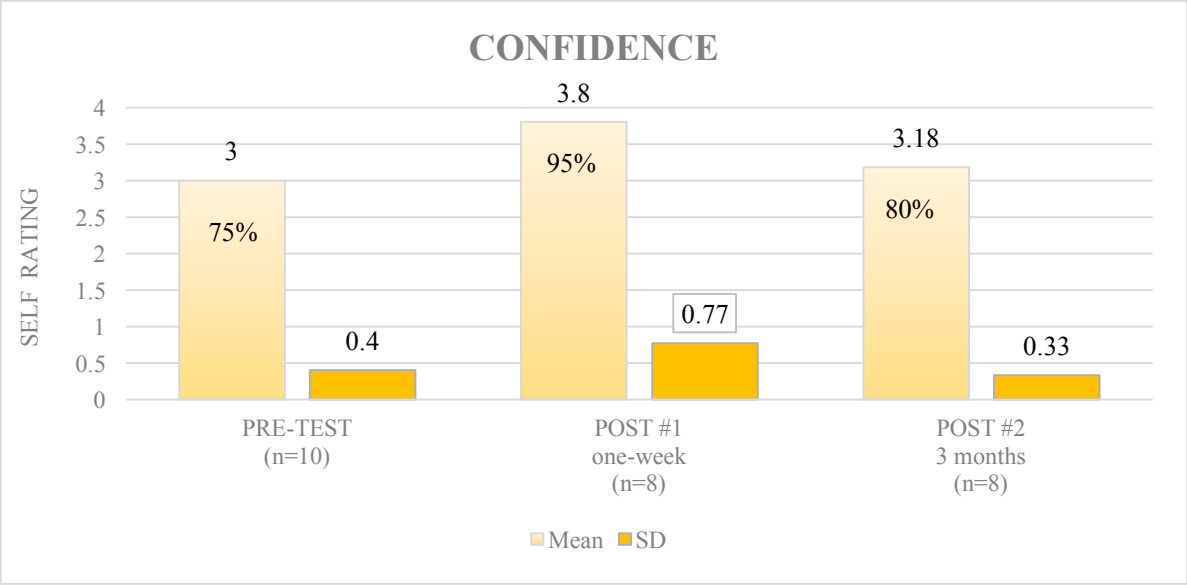
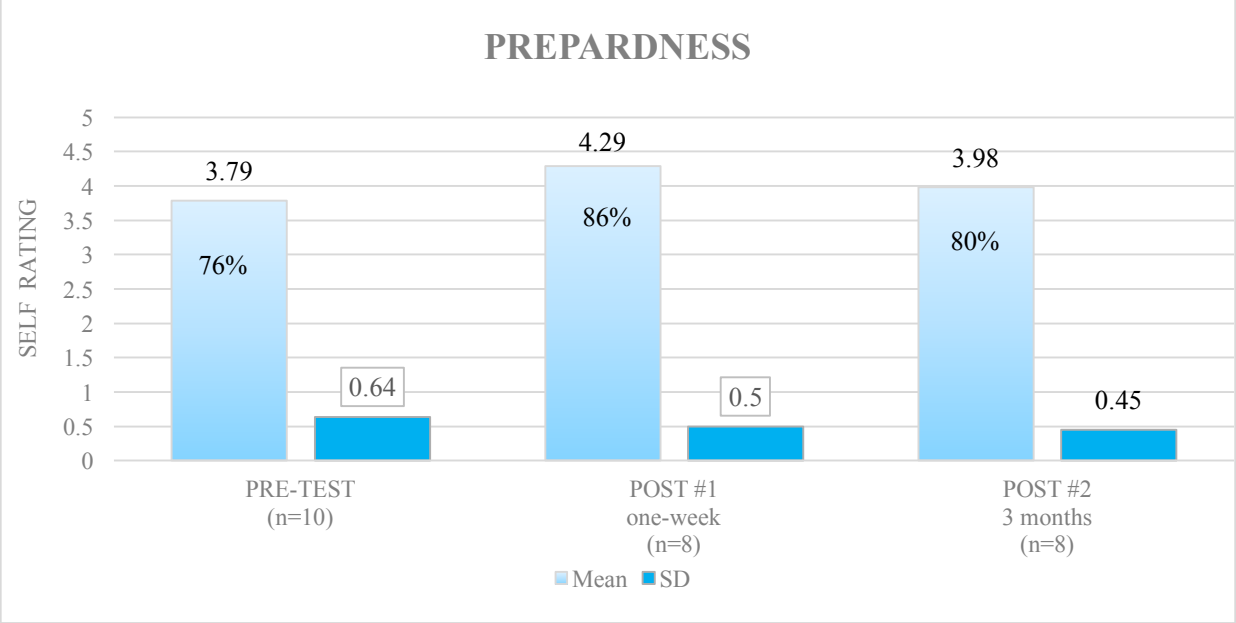


Chart 3

Pre/Post Test Preparedness Mean Scores



All three categories saw an improvement in mean scores at one-week post- and 3-months post-intervention compared to baseline data. Overall, knowledge scores ranged from a low of 12 points to a high of 26 points out of a total of 29 points, confidence ratings ranged from a low of 1 (strongly disagree) to a high of 4 (strongly agree), and preparedness ratings ranged from a low of 1 (very low) to a high of 5 (very high). The largest improvement in mean scores and ratings were seen at the one-week post-training with participants scoring 11% higher on the MH knowledge quiz (M=21.88, SD= 1.81), with a 20% increase in confidence ratings (M=3.8, SD= 0.77), and a 10% increase in preparedness ratings (M=4.29, SD=0.50) in comparison to baseline. Three months later, post #2 mean scores and ratings decreased slightly from that of post #1, but still remained higher than baseline with knowledge at 8% higher (M=20.88, SD=2.70), confidence at 5% higher (M=3.18, SD=0.33), and preparedness at 4% higher (M=4.29, SD=0.45) than baseline scores and ratings.

In order to assess the evaluation objective that at least 60% of participants would show an increase in knowledge, confidence, and preparedness at both post-intervention assessments compared to baseline, individual scores and ratings were assessed and reported as a change in mean scores for all three categories in Figure 2.

Figure 2

Changes in Individual Mean Scores Compared to Baseline

	INDIVIDUAL KNOWLEDGE (% change)	INDIVIDUAL CONFIDENCE (% change)	INDIVIDUAL PREPARDNESS (% change)
POST #1 One-week *(n=8)*	**Increased: 87.5%** Decreased: 0% Unchanged: 12.5%	**Increased: 87.5%** Decreased: 12.5% Unchanged: 0%	**Increased: 75%** Decreased: 25% Unchanged: 0%
POST #2 3 months *(n=8)*	**Increased: 75%** Decreased: 25% Unchanged: 0%	**Increased: 62.5%** Decreased: 12.5% Unchanged: 25%	**Increased: 62.5%** Decreased: 25% Unchanged: 12.5%

The objective was met in all three categories as individual mean scores increased by a minimum of 62.5% to a maximum of 87.5%. Meanwhile, unchanged and decreased individual mean scores were minimal ranging from a low of 0% to a high of 25%. Similar to the data trend in group scores, post #2 saw lower individual scores across all three categories compared to post #1.

Lastly, to account for the variation in sample sizes, unpaired t-tests were conducted to determine if the positive changes seen in mean group scores and ratings for knowledge, confidence, and preparedness between pre- and post-intervention data points were statistically significant. The results are detailed in Figure 3 and are expressed using the equation t(degrees of freedom) = (t-value), (p-value). [Note: degrees of freedom for each test was 16].

Figure 3

Independent t-tests for Differences in Mean Scores

PRE-TEST	POST #1		PRE-TEST	POST #2
KNOWLEDGE	**KNOWLEDGE**		**KNOWLEDGE**	**KNOWLEDGE**
n = 10	*n = 8*		*n = 10*	*n = 8*
M = 18.5	M = 21.88		M = 18.5	M = 20.88
SD = 2.84	SD = 1.81		SD = 2.84	SD = 2.7
p =	**0.0101**		*p =*	0.0899
t =	2.9142		*t =*	1.8051
95% CI =	CI -5.8370 to -0.9230		95% CI =	CI -5.1751 to 0.4151
standard error of difference	1.159		standard error of difference	1.318
CONFIDENCE	**CONFIDENCE**		**CONFIDENCE**	**CONFIDENCE**
n = 10	*n = 8*		*n = 10*	*n = 8*
M = 3	M = 3.8		M = 3	M = 3.18
SD = 0.4	SD = 0.77		SD = 0.4	SD = 0.33
p =	**0.0115**		*p =*	0.3216
t =	2.8533		*t =*	1.0228
95% CI =	CI -1.3944 to -0.2056		95% CI =	CI -0.5531 to 0.1931
standard error of difference	0.276		standard error of difference	0.268
PREPARDNESS	**PREPARDNESS**		**PREPARDNESS**	**PREPARDNESS**
n = 10	*n = 8*		*n = 10*	*n = 8*
M = 3.79	M = 4.29		M = 3.79	M = 3.98
SD = 0.64	SD = 0.5		SD = 0.64	SD = 0.45
p =	0.0894		*p =*	0.4884
t =	1.8084		*t =*	0.7092
95% CI =	CI -1.0861 to 0.0861		95% CI =	CI -0.7579 to 0.3779
standard error of difference	0.28		standard error of difference	0.176
Key: *n= participants, M= mean; SD= standard deviation; CI= confidence interval*				

Six unpaired t-tests were conducted utilizing the number of participants (*n*), mean (M), and standard deviation (SD) for each of the three categories. Only two of the six unpaired t-tests were found to be statistically significant and are outlined in bold. The increase in mean knowledge scores from baseline (M=18.5, SD=2.84) to post #1 (M=21.88, SD=1.81) was statistically significant at t(16) =2.91, p<0.01; and the increase in mean confidence ratings from baseline (M=3.0, SD=0.40) to post #1 (M=3.8, SD=0.77) was statistically significant at t(16) =2.85, p<0.01. Based on these results, it is possible that the observed increase in knowledge and confidence scores may provide enough evidence to reject the null hypothesis that the intervention had no effect. However, it is also possible that because of the small sample size, the increases in scores and ratings observed in this sample may not be a true reflection of the

differences that exist at the population level. To determine which scenario is more likely, the tests would have to be repeated with a larger sample size.

Evolution of Project

Expected Vs. Actual Outcomes

Since the MH-TIPS online program included many training components that were identified to produce sustainable changes in the literature, it was expected that Hawaii Keiki NPs would see an increase in scores and ratings over time. The design and tools of this project were modeled after the original MH-TIPS CA pilot study, therefore it was reasonable to use the CA pilot results in a comparison of data. A few key differences in design for the CA pilot included utilization of the in-person MH-TIPS training course, a larger and more diverse sample of health care professionals, and assessments were conducted at one-week post- and two-weeks post-training. In comparing the results, both Hawaii Keiki and the CA pilot demonstrated a sharp increase in knowledge, confidence, and preparedness scores and ratings at one-week post-training, but self-efficacy ratings differed between the two studies. The CA pilot demonstrated an increase in confidence and preparedness ratings at 2-weeks post-training, whereas the Hawaii Keiki NPs showed a decrease in confidence and preparedness ratings at 3-months post-training (Stephan & Bohnenkamp, 2015).

Facilitators

Facilitators for this projected included support from Hawaii Keiki administration, cooperation and buy in from the Hawaii Keiki NPs, and communication/collaboration with the researchers from the MH-TIPS CA pilot. The Hawaii Keiki Executive Operations Director helped to provide the human and physical resources needed to complete this project. Lastly, staff

members' willingness to participate in the training and surveys were of great benefit to this project.

Barriers

The biggest barrier in the implementation of this project was creating a feasible timeline for the online training and assessments that would accommodate the busy schedule of the Hawaii Keiki NPs. The NPs had multiple trainings, meetings, and clinical obligations that took place when implementation was originally scheduled, therefore the due dates for the online training and assessment surveys were changed a couple of times to best accommodate the NPs' schedules.

Discussion

Interpretation of Findings

The downward trend in confidence and preparedness ratings over time that was observed in this project could have been due to a number of key issues including lack of MH resources and support systems, limited time/opportunities to implement new skills and techniques, lack of available MH professionals for referral, lack of awareness of community MH resources, and simply low general comfort in engaging with MH issues. To remedy these issues, efforts should be focused on ensuring that MH screening tools and resources are readily available in all clinics; providers should have an opportunity to engage with community MH resources; more opportunities should be offered for MH training and discussion to increase comfort; and lastly, implementation support should be included to drive improvements, provide feedback, and promote sustainability in provider practice.

Future Recommendations

There are several limitations of this project that may affect the validity and reliability of the results including a small sample size, volunteer sampling, self-report bias, and the potential for skewed results due to the practice effect. Furthermore, all data was collected through online assessments and did not include observations of actual behaviors or chart-based documentation of NPs. Recommendations for future research are to replicate this project with a larger and more diverse sample, enable the ability to add comments or elaborate on the ratings in the surveys, augment survey data with interviews and vignettes to provide more detailed information, and lastly, expand the use of online MH-TIPS training to the private school sector.

Next Steps

As a result of this project, all existing Hawaii Keiki NPs have successfully completed the online MH-TIPS program and have demonstrated an overall improvement in MH knowledge and provider self-efficacy. Project results may be used by Hawaii Keiki to inform future decisions regarding MH training requirements as this program has proven to be effective, requires minimal time and resources, and it is free of cost. In the future, nursing students from the University of Hawaii at Manoa can help to expand the project by creating a tracking system for MH screenings, referrals, and follow-ups at Hawaii Keiki to objectively evaluate if provider practice has improved. Lastly, after improving the delivery of MH care by training providers, we can then begin to address the larger issues that hinder positive MH outcomes for Hawaii students including a lack of accessibility to MH care, decreased understanding and social stigma of MH disorders, and failure to address the gaps and barriers of the MH infrastructure in the public school system.

Implications for DNP Essentials

The DNP degree is a practice-focused, terminal degree that focuses on the healthcare outcomes of populations from an organizational perspective, as well as nursing's impact on healthcare policy (American Association of Colleges of Nursing [AANC], 2006). Moreover, doctoral education aims to prepare nurses for the highest level of leadership in practice and scientific inquiry. These themes remain consistent throughout the DNP curricula and are reflected in the eight foundational competencies listed in the *Essentials of Doctoral Education for Advanced Nursing Practice* (2006). All five stages of this DNP project from the discovery and summary of evidence, to the translation and integration of an evidence-based training intervention, and evaluation of the data met these competences which resulted in improved mental health outcomes through leadership, quality improvement processes, and evidence based practice.

Essential I: Scientific Underpinnings for Practice

This project utilized EBP to integrate nursing science with knowledge from multiple disciplines in order to generate an improvement in clinical practice that was based on scientific evidence. The project design, intervention, tools, and procedures were all informed by evidence that had been thoroughly tested and evaluated. This information was then contextualized to fit Hawaii Keiki's needs in order to effectively improve MH practice in school health clinics.

Essential II: Organizational & Systems Leadership for QI & Economics

This project utilized an online training intervention to promote improved practice of delivering safe and efficient MH care to students. As part of the planning stage, a cost-savings plan was constructed and presented to stakeholders. The positive results of this project will allow Hawaii Keiki to make changes to the organization's training policies and procedures as needed.

Essential III: Evidence-Based Practice/Translation Science

A thorough search and synthesis of available literature was conducted to identify key gaps and barriers for PCPs that hindered delivery of pediatric MH care. That information was used to guide the design and implementation of a MH training intervention for Hawaii Keiki NPs that would subsequently improve MH outcomes for students. This process emphasized the importance of utilizing available evidence to effect practice change within a population.

Essential IV: Information Systems/Technology

The utilization of technology and informatics was the basis of the educational intervention for this project. The online MH-TIPS course is a multifaceted training and implementation support system with various electronic resources including interactive training modules, video vignettes, and an electronic tool kit of MH resources. Furthermore, information technology was utilized to collect and analyze the data as well as to disseminate project results.

Essential V: Health Care Policy & Ethics

One of the most significant external factors that influenced this project was a large national focus on improving access to and delivery of MH care in response to multiple mass shootings. The planning and design phase of this project required analyzing various health care policies and initiatives that were focused on practice regulation, access to care, safety, and efficacy of MH care in the pediatric population. This information will be used to advocate for changes to the MH infrastructure in school-based settings.

Essential VI: Inter-professional Collaboration

The success of this project required communication and collaboration with professionals from multiple disciplines including psychology, nursing, pediatrics, and public health. The

results of this project highlighted the necessity of an interdisciplinary approach to analyze and effect practice change in the complex arena of pediatric MH.

Essential VII: Prevention and Population Health

The evaluation and interpretation of epidemiological and environmental information was required to determine effective ways to improve access to and delivery of MH care for school-based youth. In particular, the psychosocial dimensions and cultural impacts related to MH care in Hawaii were analyzed and served as the foundation for this project.

Essential VIII: Advanced Nursing Practice & Education

The purpose of a DNP project is to make a scholarly contribution to the improvement of patient outcomes through integration of evidence-based practice, quality improvement, and systems leadership. This project met all of these objectives and allowed the student to utilize nursing science to design and implement new ways to improve MH care delivery that was safe and effective for advanced practice nurses.

Conclusion

This evidence-based, quality improvement project utilized the online MH-TIPS program to improve Hawaii Keiki NPs' ability to identify, address, and refer pediatric MH issues by increasing provider knowledge and self-efficacy. This project met the evaluation objective that at least 60% of participants would demonstrate an improvement in knowledge scores, confidence ratings, and preparedness ratings at one-week post and 3-months post-intervention compared to baseline. Trends in knowledge over time were as expected, however, Hawaii Keiki NPs demonstrated a decrease in confidence and preparedness ratings over time which differed from expected results. This downward trend in self-efficacy ratings could have been due to a lack of resources and support, limited time for implementation, a lack of MH professionals,

unfamiliarity with community resources, and simply low general comfort with MH issues. Recommendations for future research include replicating this project with a larger and more diverse sample, enabling the addition of comments on surveys, incorporating interviews and vignettes in data collection, and expanding the MH-TIPS training to the private school sector. The next steps include utilizing project results to inform decisions regarding MH training requirements at Hawaii Keiki, creating a MH referral tracking system to evaluate objective changes in provider practice, and addressing large-scale issues of MH stigma and improving the MH infrastructure in the public school system. This project met all eight DNP essentials developed by the AACN which prepares nurses for the highest level of education and leadership, and has demonstrated improved MH outcomes through leadership, quality improvement processes, and the translation of evidence into clinical practice.

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Appendix A: MH-TIPS CA Mental Health Preparedness Questionnaire

Mental Health Preparedness

How would you rate your preparedness to:

	Very Low 1	Low 2	Medium 3	High 4	Very High 5
1. Recognize when a student's behavior is a sign of psychological distress.					
2. Recognize when a student's physical appearance is a sign of psychological distress.					
3. Discuss with a student your concern about the signs of psychological distress they are exhibiting.					
4. Motivate a student exhibiting signs of psychological distress to seek help.					
5. Recommend mental health support services (such as a counselor, social worker, psychologist) to a student exhibiting signs of psychological distress.					
6. Contact the parent of a student exhibiting signs of psychological distress.					
7. Coordinate with mental health support services in your school or community around student mental health care.					

Appendix B: MH-TIPS CA Mental Health Confidence Questionnaire

Mental Health Confidence

Please rate how much you agree/disagree with the following statements:

	Strongly Disagree 1	Disagree 2	Agree 3	Strongly Agree 4
1. I feel confident in my ability to discuss my concerns with a student exhibiting signs of psychological distress.				
2. I feel confident in my ability to recommend mental health support services to a student exhibiting signs psychological distress.				
3. I feel confident that I know where to refer a student for mental health support.				
4. I feel confident in my ability to help a student experiencing a mental health crisis seek help.				
5. Part of the role of school health providers is to identify and connect students experiencing psychological distress with mental health support services.				

Appendix C: MH-TIPS CA Mental Health Knowledge Quiz

Mental Health Knowledge Quiz

1. How many children and adolescents have a mental health problem that causes at least mild impairment?
   a. 1 in 3
   b. 1 in 10
   c. 1 in 5
   d. 1 in 25

2. Useful interventions for mental health disorders in youth include both psychological and pharmacologic treatment.
   a. True
   b. False

3. Which statement accurately defines mental health?
   a. Mental health is a person's emotional well-being.
   b. Mental health is a person's psychological well-being.
   c. Mental health is a person's social well-being.
   d. Mental health affects how people think, feel and act.
   e. All of the above

4. Common symptoms associated with anxiety problems in youth include:
   a. Fear
   b. Physical symptoms (e.g. headache, stomachache)
   c. Irritability
   d. Hyperactivity
   e. A, B, and D
   f. A, B and C
   g. B, C and D

5. Mental health problem symptoms are typically similar for youth across development.
   a. True
   b. False

6. Symptoms associated with depression in youth can frequently be similar to anxiety disorder symptoms.
   a. True

b. False

7. A student with ADHD is only likely to benefit from pharmacologic treatment.
    a. True
    b. False

8. A 15-year-old youth comes into your office crying and says that she just failed her math exam and that she has been feeling really bad lately and "doesn't think it's worth it". What would you want to make sure you covered with this student before she left your office?
    a. Let her know that your office is always a safe place to talk and she can come back anytime.
    b. Find out more information about self-reported symptoms of feeling bad recently.
    c. Assess for thoughts of self-harm.
    d. Talk with the student's parent.

9. An administrator brings an agitated 8-year-old youth to your office and reports that he has been "out of control" all day in class. The student is swinging his legs in your office and grabbing at your box of tissues. What is the first thing that you would want to do to address this issue?
    a. Find out more information from the administrator about the student's behavior today.
    b. Call the student's parent.
    c. Brainstorm ways to de-escalate the student's current behavior.
    d. Reprimand the student for his behavior in class and in your office.

10. When you are assessing for student risk of self-harm, what factors are important to consider?
    a. Whether the student reports that s/he will not harm himself/herself and is able to contract for safety.
    b. Whether the student has a specific plan of self-harm.
    c. Whether the student has supervision at school and at home.
    d. B and C
    e. All of the above

11. When you are assessing for specific symptoms of a mental health problem, it important to consider how distressing the problem is to the youth.
    a. True
    b. False

12. When assessing for a mental health problem in an adolescent, the best practice is to only interview the student.
    a. True
    b. False

13. Students may be able to receive individual and family therapy services through the school psychologist.
    a. True
    b. False

14. Confidentiality laws restrict school health providers from contacting outside mental health providers to make a referral or coordinate care.
    a. True
    b. False

15. When referred to community mental health providers, students and families are typically successful in accessing services.
    a. True
    b. False

16. A youth comes to your office and reports that she has a headache. You also noticed her crying in the hallway earlier that day. Which practice would you use to find out more information from the student and encourage her to share more details about her problem?
    a. Psychoeducation
    b. The OARS approach
    c. The LIST approach
    d. Diagnostic Interviewing
    e. Mental Health 101

17. As a school health provider, it is important to highlight your expertise in mental health as a first step in giving advice about a mental health problem.
    a. True
    b. False

18. Problem-solving is the best strategy for addressing student or parent ambivalence about following through with mental health treatment recommendations.
    a. True
    b. False

19. When students or parents are angry they are more likely to make generalizations or use "black and white" thinking.
    a. True
    b. False

20. To facilitate a family or team meeting, the school health provider should:
    a. Prepare an agenda and guide the group discussion.
    b. Be ready to manage and normalize conflict between group members.
    c. Determine next steps.
    d. A and B
    e. All of the above

21. You notice that a youth comes to your office several days a week right before lunch and reports having a headache and then stays in your office to rest during lunch time. Which practice would you use to better understand whether there might be an underlying mental health concern?
    a. Mental Health 101
    b. The LIST approach
    c. Identification and Assessment
    d. Positive Outlook Planning
    e. Psychoeducation

22. A youth often has negative thoughts that bring her mood down. Which practice would you use to help the child improve her mood by changing how she thinks?
    a. Positive Outlook Planning
    b. Activity Scheduling
    c. Cognitive Coping
    d. Psychoeducation
    e. Relax and Regroup

23. A youth is upset all day at school almost every day. When he gets home, he is sad and then sits in his room until he has to go to bed. Which practice would help him think of things he could do that are easy to do almost anywhere and could make him feel good?
    a. Cognitive Coping
    b. Activity Scheduling
    c. Relaxation
    d. Psychoeducation
    e. Positive Outlook Planning

24. A youth reports that he gets stressed before taking tests and that his muscles feel tense and his stomach frequently hurts right before a big test. Which practice would you use to help the child improve these physical symptoms and feel less stressed?
    a. Cognitive Coping
    b. Stress Management
    c. Positive Outlook Planning
    d. The OARS approach
    e. Relaxation

25. A youth is frequently referred to your office for behavior problems in the classroom and difficulty getting along with peers. Which practice would you use to help facilitate improved interactions in the classroom?
    a. Social Problem-Solving
    b. Relax and Regroup
    c. Cognitive Coping
    d. Behavior Chart
    e. Psychoeducation

26. Common side effects of stimulant medications include:
    a. Moodiness-irritability
    b. Loss of appetite
    c. Vomiting and diarrhea
    d. Sleep problems
    e. B, C, and D
    f. A, B and D

27. Child psychiatrists are the most frequent prescribers of psychotropic medication to youth.
    a. True
    b. False

28. What psychotropic medications have been approved by the FDA for treatment of depression in children and adolescents?
    a. Citalopram (Celexa)
    b. Bupropion (Wellbutrin)
    c. Fluoxetine (Prozac)
    d. A and C
    e. A and B

29. Risperidone (Risperdal) is typically prescribed in children and adolescents for the treatment of:

a. Depressed mood
b. Anger and irritability
c. Anxiety
d. Sleep problems